

Nigeria newborn and child-health national Clinical Practice Guidelines

A landscape analysis



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Abbreviations

AGREE	Appraisal of Guidelines for Research & Evaluation Instrument
APHPN	Association of Public Health Physicians of Nigeria
CAP	Community-acquired pneumonia
CPG	Clinical Practice Guideline
FMOH	Federal Ministry of Health
GELA project	Global Evidence, Local Adaptation project
IOM	Institute of Medicine
NANNM	National Association of Nigeria Nurses and Midwives
NANPAN	National Association of Nigeria Paediatric Nurses
NDHS	Nigeria Demographic and Health Survey
NISONM	Nigerian Society of Neonatal Medicine
NISPGHAN	Society of Paediatric Gastroenterology, Hepatology and Nutrition
NISPO	Nigerian Society of Paediatric Oncology
NSHDP II	Second National Strategic Health Development Plan (NSHDP II)
PAN	Paediatric Association of Nigeria
PRD	Poverty-related disease
SDG	Sustainable Development Goal
SOGON	Society of Gynaecology and Obstetrics of Nigeria
SSA	Sub-Saharan Africa
UHC	Universal Health Coverage
WHO	World Health Organization

Executive summary

Worldwide, there has been progress towards the attainment of child-health targets of Sustainable Development Goal 3.2 – end preventable deaths of newborns and children under five years of age by 2030 – by aiming to reduce the neonatal mortality rates to at least 12 per 1000 live births and under-five mortality rates to at least 25 per 1000 live births. This progress has been suboptimal in sub-Saharan Africa with the risk of not achieving these targets.

Evidence-informed clinical practice guidelines (CPGs) are demonstrably cost effective and improve clinical and population health outcomes. To optimise healthcare delivery especially in poorly resourced countries, the World Health Organization (WHO) has either led or supported the development of CPGs for leading causes of deaths in newborns and children especially infectious and other poverty-related diseases. Although evidence-informed healthcare practice has been growing in sub-Saharan Africa (SSA) and methodological guidance for CPG development by the WHO exists, CPGs in sub-Saharan Africa do not always meet standards for reporting and often perform poorly in terms of their rigour of development and editorial independence. In addition, the adaptation of such guidelines and recommendations to national contexts is not well described. In Nigeria, it is unclear the extent to which newborn and child-health CPGs are available, evidence informed and developed using standard methodology as recommended by the WHO.

The Global Evidence, Local Application (GELA) project is a collaborative multi-country project. It undertook to: i) assess the current landscape of newborn and child-health CPGs in Nigeria over the past five years; ii) critically appraise the quality and reporting standards using the AGREE II tool; and, iii) identify gaps and plan to implement capacity building and dissemination activities for relevant key stakeholders in the country.

Several approaches were used to identify relevant national guidelines including website searches of international, national and sub-national agencies, personal contacts and reference lists of included guidelines. Identified CPGs were screened using a pre-determined eligibility tool, data were extracted and an analysis done. A total of 655 records were retrieved of which 46 full texts were retrieved. Eleven guidelines were included in the analysis. Overall, the CPG development process in Nigeria is predominantly driven by the Federal Ministry of Health with most of the CPGs directed at primary, secondary and tertiary levels of care. The majority of the CPGs focused on infants and young children, and targeted health practitioners for their implementation. Newborn care and HIV prevention and treatment were the top conditions addressed, and the quality of the CPGs was generally limited by poor rigour of development, applicability, and editorial independence. Adapted guidelines were associated with higher quality scores from the AGREE II appraisal compared to *de novo* guidelines. Notably, there were few guidelines targeting poverty-related diseases and none focusing on public-health interventions. Given the timeline limitation of five years, this may not be a full reflection of the extent of the landscape of CPGs in the area of newborn and child health in Nigeria. Nonetheless, this baseline analysis should inform future interventions in Nigeria's CPG ecosystem.

Current efforts and interest in CPG development in the context of the achievement of Sustainable Development Goal 3.2 need to be expanded to include relevant poverty-related diseases that drive morbidity and mortality in newborn and child health in Nigeria. Prioritisation of newborn and young child-health conditions using evidence-based methods that feed into the CPG process will need to be more rigorous. Other key stakeholders will need to be involved in the process, and guideline-development methodology improved upon with the Federal Ministry of Health acting as a clearinghouse.

01

INTRODUCTION

Globally, the world has recorded gains in the health of newborn and young children as indicated by the trend of key child-health indicators. The global under-five mortality rate declined from 76 to 38 per 1000 live births between 2000 and 2019.¹ These gains notwithstanding, more than half of the 5.2 million deaths in children and youth in 2019 were among children under five years. The sub-Saharan Africa (SSA) region has the highest neonatal and under-five mortality rates in the world – 27 per 1000 live births and 74 per 1000 live births respectively.^{2,3} Most countries in the region fall below the average gains suggesting a risk of not meeting the child-health targets of the SDGs which is to reduce the neonatal and under-five mortality rates to 12 per 1000 live births and 25 per 1000 live births respectively by 2030 (<https://sdgs.un.org/goals/goal3>).

The World Health Organization (WHO) reports that 75 per cent of all neonatal deaths occur in the first week of life, with approximately 1 million neonates dying within 24 hours of birth.³ Infections, preterm births, birth asphyxia and birth defects were the leading causes of deaths in the neonatal period, while pneumonia, diarrhoea, birth defects, malaria, and malnutrition account for most deaths in the post-neonatal period up to the first five years of life.³ Socio-economic and health-system factors such as poverty, inequity, poor health systems, poor access to healthcare and poor nutrition impact on and sustain this undesirable child-health status. In developing countries, poverty-related diseases (PRD) including pneumonia, diarrhoea and malaria remain amongst the leading causes of death in children under five years of age.^{4,5} The COVID-19 pandemic further exerted considerable pressure on already struggling health systems, prompting bleak predictions for the consequences on child health.^{6,7}

Poor newborn and child-health outcomes remain key public-health issues in Nigeria. Although there has been a decline in child mortality rates globally and regionally, the decline in Nigeria, especially for neonatal mortality has been slow and minimal despite the implementation of various maternal and child-health programmes over time. In 2018, the neonatal mortality rate in Nigeria was reported as 39 per 1000 live births, a decline by nine per 1000 live births from 48 per 1000 live births in 2003 over a 15-year period.^{8,9} Similarly, Under-five mortality declined from 201 deaths per 1000 live births in 2003 to 132 deaths per 1000 live births in 2018. Presently, Nigeria has the highest number of neonatal deaths in sub-Saharan Africa, and the highest number of under-five deaths globally.^{3,10} As at December 2021, the country's under-five mortality rate was reported as 113.8 per 1000 live births,¹¹ a far cry from the Sustainable Development Goals' (SDGs) target. This threatens the feasibility of attaining the SDGs targets for neonatal and under-five mortalities by 2030 if pragmatic and highly effective strategies are not engaged to stop the trend.

Most neonatal and under-five deaths are due to poverty-related health conditions which are preventable or treatable with optimal, affordable, accessible, and cost-effective maternal and child-health interventions.¹ A recently published verbal autopsy study in Nigeria reports neonatal infections (sepsis, pneumonia and meningitis) and intrapartum injury as the leading causes of neonatal deaths, while malaria, diarrhoea, and pneumonia were the leading causes of deaths of children in the one–59 months age group in 2019.¹²

The WHO reports that the survival of newborns is positively correlated to high standards of neonatal care, obstetric care, and state of socio-economic development of a country.³ In line with this, the Second National Strategic Health Development Plan (NSHDP II) for 2018 – 2022⁹ highlights the development and implementation of emergency obstetrics, newborn and child-health treatment guidelines and protocols across the different levels of care, from community level, including effective referral systems as a key activity for strengthening emergency obstetric, newborn and childhood care (Table 21⁹). To promote access to effective and affordable healthcare especially for vulnerable population groups, Nigeria also strives to attain Universal Health Coverage (UHC) as part of the SDGs agenda through the National Health Insurance Scheme deployed by the National Health Authority. Universal Health Coverage seeks to strengthen health systems, increase equitable access to medicines and public-health interventions, and enhance healthcare service delivery.

The Institute of Medicine defines Clinical Practice Guidelines (CPGs) as “statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options”.¹³ Properly developed CPGs incorporate critically appraised and synthesised scientific evidence, clinician experiential knowledge and skills, patient values and preferences, and consideration of the context in which the guidelines will be deployed. This is summed up as an evidence-informed approach to guideline development and ensures that already scarce resources are used effectively and efficiently, avoiding harm, maximising good, and improving healthcare delivery and outcomes.^{14, 15}

To support healthcare delivery especially in poorly resourced or inequitable countries, the WHO has developed CPGs for leading causes of deaths in newborns and children especially for infectious diseases. Countries may either ‘adopt’ such guidelines and implement the recommendations as they are or adapt the guideline to cater for contextual peculiarities with respect to the acceptability, appropriateness, cost, or feasibility of the recommendations provided by the guideline. Conversely, countries can undertake (new) *de novo* CPG development. This approach is resource-intensive, time-consuming and requires investment in the overall management of the process, including convening the CPG group, managing interests, priority setting and scoping the key questions for recommendations, commissioning and conducting systematic reviews, and hosting the group for decision making.

Transparency in the methodology used for the CPG adoption, updating, adaption, or development process is critical for creating trustworthy, context-sensitive recommendations. However, inconsistencies in these processes abound, and issues such as lack of transparency, clarity, poor reporting, failure to convene multi-stakeholders, failure to use rigorous methodologies, lack of equity considerations, failure to involve

patient groups and conflicts of interest, among others, raise doubts about the credibility and usefulness of the CPG recommendations.^{13, 16}

Although evidence-informed healthcare practices have been growing in SSA,¹⁵ and methodological guidance for CPG development exists,¹⁷ studies have found that CPGs in Africa have not met standards for reporting and often perform poorly on reporting on their rigour of development and editorial independence.^{18,19} Furthermore, the adaptation of such guidelines and recommendations to national contexts is not well described.²⁰ Nonetheless, given the huge number of already existing evidence syntheses products, the need to avoid duplication of efforts and waste of research resources, there is the need to first scope the landscape before determining whether to adopt, adapt or develop *de novo* guidelines.²¹

In Nigeria, it is unclear the extent to which newborn and child-health CPGs are available, evidence-informed and developed using standard methodology as recommended by the WHO. This study through the GELA project therefore assesses the current landscape of newborn and child-health CPGs in Nigeria and appraises the methods for guideline development with the view of identifying gaps and improving how guidelines are developed or adapted in Nigeria.

The GELA project plan includes setting priorities; identifying existing evidence and CPGs; adapting and contextualising these to the local setting; and, communicating the final recommendations to relevant stakeholders using innovative digital platforms. This process will offer tailored experiential capacity strengthening opportunities to policy makers, researchers, and civil society participants. This report presents the results of one of the first steps in this process – identifying and appraising existing newborn and child-health related CPGs.



02 OBJECTIVES

The objectives of this study were to:



identify CPGs for newborn and child-health topics in Nigeria developed within the last five years;



describe the scope of the identified CPGs including range of recommendations and methods used and list the stakeholders involved; and,



appraise the quality and reporting standards of identified CPGs using the AGREE II tool²² for *de novo* guidelines and an adapted AGREE II for adapted CPGs.

03 METHODS

Guideline identification and selection

We used several approaches to identify relevant national guidelines for inclusion in this landscape analysis of CPGs. These included:

Websites: We searched the websites of Ministries of Health, professional paediatric and other relevant associations in Nigeria using keywords such as guidelines, newborn, etc. where a search interface was available and amenable to searching. Where this was not practical, we searched the relevant pages e.g. "Publications" or "Resources" on websites. Specifically we searched websites of the following organisations (where websites were available): Federal Ministry of Health, Nigeria; State Ministries of Health, the Paediatric Association of Nigeria (PAN); Nigerian Society of Neonatal Medicine (NISONM); National Association of Nigeria Nurses and Midwives (NANNM); Association of Public Health Physicians of Nigeria (APHPN); and, the Society of Gynaecology and Obstetrics of Nigeria (SOGON). We looked for but did not find websites for the National Association of Nigeria Paediatric Nurses (NANPAN); Society of Paediatric Gastroenterology; Hepatology and Nutrition (NISPGHAN); Nigerian Society of Paediatric Oncology (NISPO); and, Save the Children Nigeria.

Clearinghouses, key journals: We also searched international guidelines clearinghouses such as Guidelines International Network (GIN) Library (<https://g-i-n.net/international-guidelines-library/>); Emergency Care Research Institute (ECRI) (<https://www.ecri.org/>), and BIGG (International Database of GRADE Guidelines) (<https://sites.bvsalud.org/bigg/en/biblio/>). In addition, we searched the *Nigerian Journal of Paediatrics* and the *Tropical Journal of Obstetrics and Gynaecology* which are the journals of the Paediatric Association of Nigeria and Society of Gynaecology and Obstetrics of Nigeria respectively.

Reference lists, key contacts and search engine: We reviewed the reference lists of included guidelines to identify additional guidelines and sent emails to the Federal Ministry of Health and professional associations to enquire about any relevant guidelines in neonatal and child health. We also conducted a literature search on Google. No date or language limits were applied to the search. Details of the search strategy (including search terms and dates of the search) can be found in Appendix A.

Screening

The search output was screened by one reviewer and checked by a second reviewer using a pretested eligibility criteria form. Five criteria were used to screen the search output: Type of document; Focus Area; Setting; Publication Year and Language. Only documents that were National or Regional Clinical Practice Guidelines (whether *de novo*, adapted or adopted), focusing on newborn and child health (from birth up to <12 years) and published between 1 January 2017 and June 2022 were included in our study. (For full details of the eligibility criteria and eligibility screening form see Appendix B).

Data extraction and management

We extracted the following data from each of the included guidelines using a piloted data-extraction tool: The title of the guideline; citation; year of publication; topic/scope, the target population; the target audience; level of care guideline is intended for; language (if not English), the responsible developer; how the group that developed the guideline was referred to; whether patients or healthcare providers were consulted; whether research evidence was sought for contextual factors (qualitative or quantitative research results on patient preferences, values, acceptability for patients, caregivers and healthcare providers, feasibility, cost/affordability, equity); and, whether GRADE or another system was used to assess the overall certainty of evidence. We also extracted data on whether the CPGs were *de novo*, adapted or adopted. In the case of adapted/adopted guidelines, we extracted data on whether they originated from WHO guidelines or another external organisation, whether there was an explicit description of the process and whether a link to the primary guideline was provided.

Appraisal and analysis

We used the AGREE II tool to appraise the quality of the CPGs. The AGREE II tool is designed to evaluate *de novo* development, and therefore, to account for the possibility of identifying adapted guidelines, we assessed the primary guideline, from which the guideline was adopted or adapted.

Each reviewer was trained in the standardised use of the instrument, and the first three guidelines were reviewed by all reviewers to ensure consistent scoring. For appraising, two independent reviewers reviewed the available CPG to establish and agree on whether it was developed *de novo* or adapted. Where unclear, the *de novo* development tool was used.

The AGREE II Instrument contains 23 key items categorised in six domains. Each domain is intended to capture a separate dimension of guideline quality.

The seven-point scoring system for each domain is as follows:

- 1 is 'strongly disagree'
- 2-6 is assigned when the item does not meet all considerations. An explanation of how to complete these scores is provided
- 7 is 'strongly agree'

The results from each reviewer were entered onto a pre-developed spreadsheet. Any discrepancies were recorded and discussed, and consensus reached.

Standardised domain scores were calculated by summing up all the scores of individual items in a domain *and by* standardising the total as a percentage of the maximum possible score for that domain.

The overall guidelines assessment – stating whether the guideline should be recommended or not for use in practice was also provided, using the AGREE II method rating from: 1, the lowest possible quality to 7, the highest possible quality AND whether the rater would recommend this guideline for use: 'Yes', 'Yes with modifications' or 'No.'

Assessing the quality of guidelines using AGREE II

For *de novo* guidelines the following domains were used:

Domain 1. Scope and Purpose (items 1-3) are concerned with the overall aim of the guideline, the specific clinical questions, and the target patient population.

Domain 2. Stakeholder Involvement (items 4-6) focuses on the extent to which the guideline represents the views of its intended users. Guideline development should involve all stakeholders whose activities are likely to be covered in the proposed guideline including patient groups.

Domain 3. Rigour of Development (items 7-14) relates to the process used to collect and synthesise the evidence, the methods to formulate the recommendations and to update the guideline.

Domain 4. Clarity of Presentation (items 15-17) deals with the language and format of the guideline.

Domain 5. Applicability (items 18-21) pertains to the likely barriers and facilitators to implementation strategies to improve uptake, and resource implications of applying the guideline.

Domain 6. Editorial Independence (items 22-23) is concerned with the formulation of the recommendations not being unduly biased with competing interests.

For adopted or adapted CPGs, the domains were adapted as follows, and the 'parent' CPG was appraised using standard AGREE II:

Domain 1. Scope and Purpose (items 1-3) are concerned with the overall aim of the guideline, the specific clinical questions, and the target patient population as defined by the national guideline developer/s.

Domain 2. Stakeholder Involvement (items 4-6) focuses on the extent to which the guideline represents the views of its intended users. Guideline development should involve all stakeholders whose activities are likely to be covered in the proposed guideline including patient groups. This should reflect involvement in the national context.

Domain 3. Rigour of Development (items 7-14) relates to the process used to collect and synthesise the evidence, the methods to formulate the recommendations and to update the guideline. This accounts for the rigour of development of the parent CPG with an additional domain accounting for the clarity of the adaptation process followed in the national CPG.

Domain 4. Clarity of Presentation (items 15-17) deals with the language and format of the guideline. This is unchanged.

Domain 5. Applicability (items 18-21) pertains to the likely barriers and facilitators to implementation strategies to improve uptake, and resource implications of applying the guideline. This pertains to tools and tips for applicability for the national context.

Domain 6. Editorial Independence (items 22-23) is concerned with the formulation of the recommendations not being unduly biased with competing interests. This refers to the editorial independence of the group that developed and adapted the guideline nationally.

The main differences between the standard AGREE II tool and the modified tool used for adapted or adopted guidelines, were in items 7, 8 and 9 of domain three (rigour of development). These items were modified to reflect the process of guidelines adaptation. Item 7, for example, was modified from "Systematic methods were used to search for evidence" to "Systematic methods were used to search for the guideline that was chosen (search strategy)".

Data on guideline variables were analysed using descriptive statistics (presented narratively and with bar charts/tables). In addition, we colour-coded the percentage results/domains as follows, to add clarity to the reporting (this is not a standard AGREE II approach, but a modification).

04 RESULTS

We retrieved a total of 655 records from our search. After screening the records, we identified 46 guidelines for full-text retrieval. After full-text screening, 12 guidelines met the inclusion criteria for our study (see PRISMA flow diagram). We were, however, unable to obtain a copy of one of the guidelines (Management of Community Acquired Pneumonia (CAP) in Children: Clinical Practice Guidelines by the Paediatric Association of Nigeria (PAN) Second Edition) for data extraction. Eleven guidelines were therefore included in the analysis (Table 1).

Table 1: National guidelines included in baseline assessment

GUIDELINE	Year	URL
Adapted guidelines		
Guidelines on the use of the shorter regimen and new drugs in the clinical and programmatic management of drug resistant tuberculosis and co-infections of Nigeria	2017	https://www.health.gov.ng/doc/GUIDELINE-FOR-SHORTER-REGIMEN-AND-NEW-DRUGS-FINAL-DRAFT.pdf
Guidelines for management of pain in Nigeria	2018	https://www.researchgate.net/publication/327154496_Guidelines_for_the_Management_of_Pain_in_Nigeria
National guidelines for the treatment of substance use disorders for Nigeria	2019	https://www.unodc.org/documents/nigeria//publications/National_Guidelines_for_the_Treatment_of_Substance_Use_Disorders_for_Nigeria.pdf
National guidelines for HIV prevention treatment and care	2020	https://nascp.gov.ng/resources/get_resource_doc/17
National interim guidelines for clinical management of COVID-19	2020	https://covid19.ncdc.gov.ng/media/files/National_Interim_Guidelines_for_Clinical_Management_of_COVID-19_v3.pdf
National guideline for the prevention, control and management of diabetes mellitus in Nigeria	2022	https://www.health.gov.ng/doc/National%20Guideline%20for%20the%20prevention,%20control%20and%20management%20of%20Diabetes%20Mellitus%20in%20Nigeria%20(3).pdf

GUIDELINE	Year	URL
<i>De novo guidelines</i>		
National guidelines for HIV testing services	2017	https://naca.gov.ng/wp-content/uploads/2019/10/Finalized-National-Guidelines-on-HTS.-pdf-Encrypted-1.pdf
Treatment guidelines for delivery of child eye health services in Nigeria	2019	https://www.health.gov.ng/doc/Treatment-Guidelines-for-Delivery-of-Child-Eye-Health%20Services%20in%20Nigeria.pdf
National guidelines for comprehensive newborn care	2021	https://drive.google.com/file/d/1JxxBnbGBD5XCK5T0BTvhUOL6qVVqNiFr/view
Kangaroo mother care (KMC) operational guidelines	2021	https://drive.google.com/file/d/1Ys3XDmDzqff2rJVI-Oyfdh-13slalqKG/view
National guidelines for basic newborn care	2021	https://drive.google.com/file/d/1E7CCNINE7c7fWaCcuscFIK9kGDcnw2n/view

Identification of guidelines via databases and registers/websites

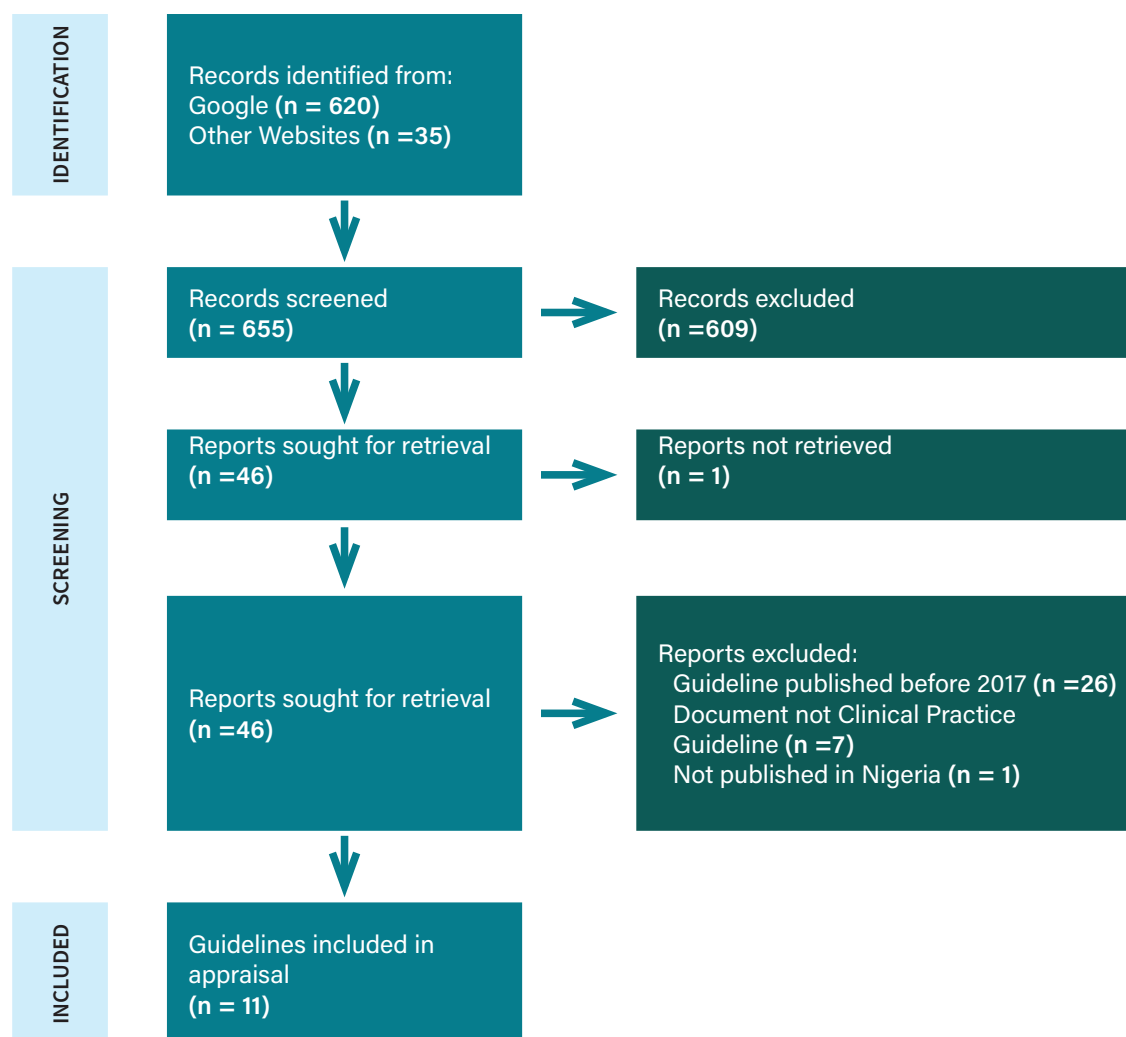


Figure 1: PRISMA flow diagram

Description of included CPGs

Overall description

All of the guidelines, except one, (National Guideline for Basic Newborn Care, which was intended for use only at the primary healthcare level) were intended for use at all three tiers of healthcare in Nigeria (primary, secondary and tertiary) (Figure 2). All the guidelines identified and appraised were in English. The included guidelines were all published within the past five years with 55% (6/11) published in the past two years (2020-2022) (Figure 3). The scope of the guidelines cut across treatment (11/11), prevention (10/11), diagnosis (9/11) and screening (8/11). None of the guidelines included in this baseline assessment focused on rehabilitation (Figure 4).

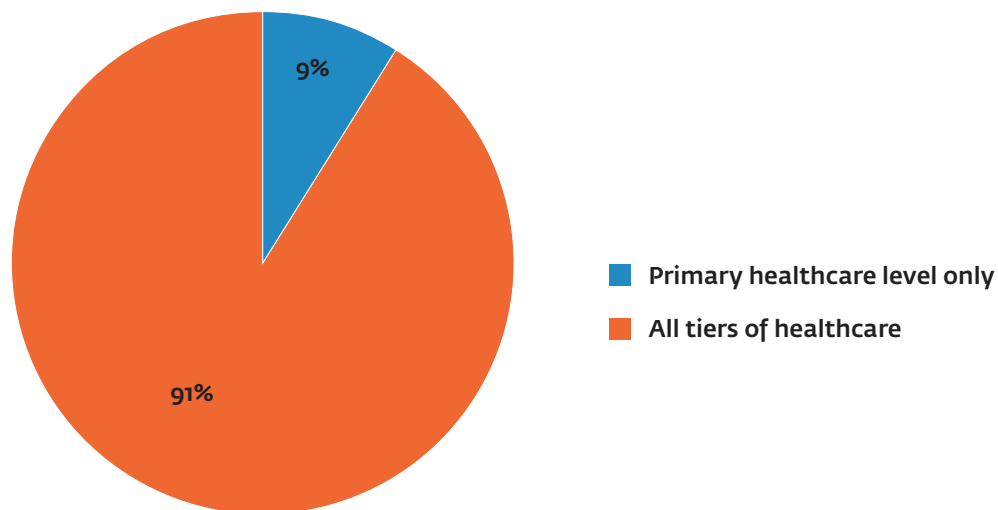


Figure 2: Level of healthcare guideline intended for

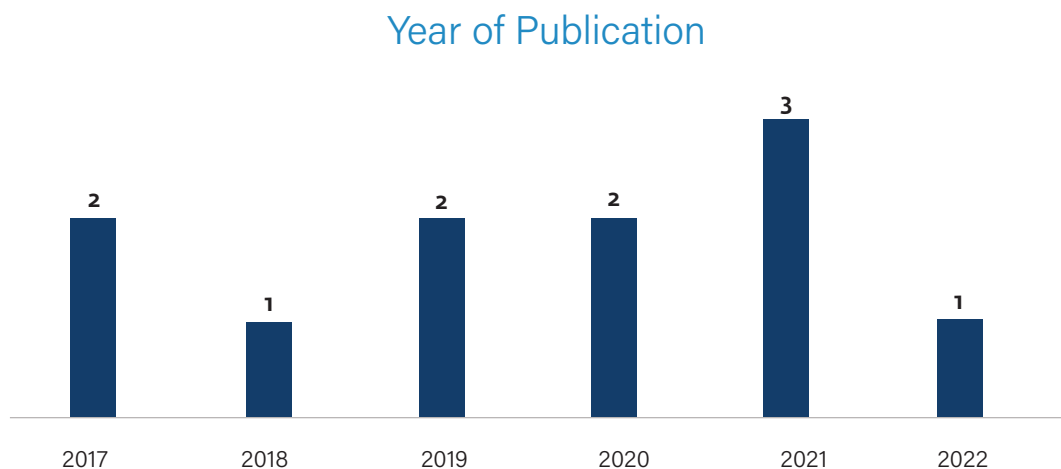


Figure 3: Year of publication of guidelines

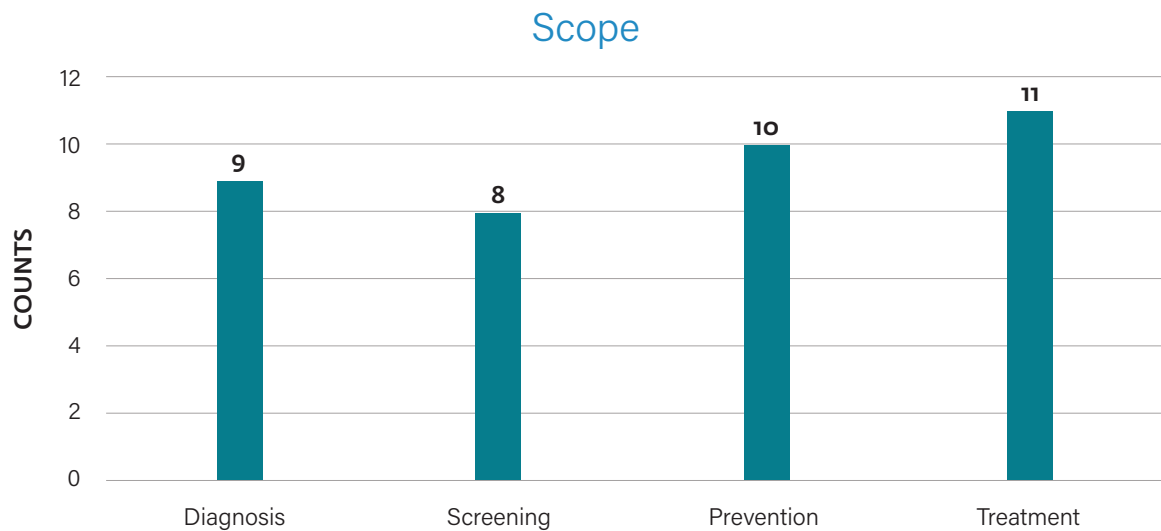


Figure 4: Scope of guidelines

All the guidelines were targeted at various stages of childhood. However, most were targeted at infants (10/11), children (10/11) and neonates (6/11). Seven guidelines were also targeted at adults in addition to children (others). One guideline was targeted at the perinatal period of childhood (Figure 5). The target audience for the guidelines was mainly health practitioners, however, three guidelines also targeted other groups. One also targeted programme managers, another targeted parents in addition to health practitioners, and one targeted health practitioners, programme managers and parents. One guideline was targeted at only programme managers (Figure 6).

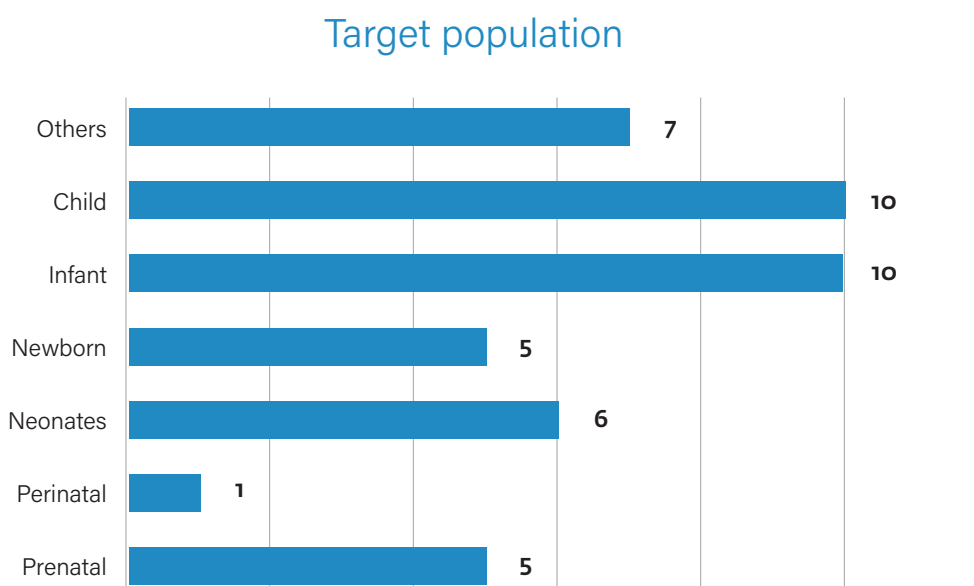


Figure 5: Target population of guidelines

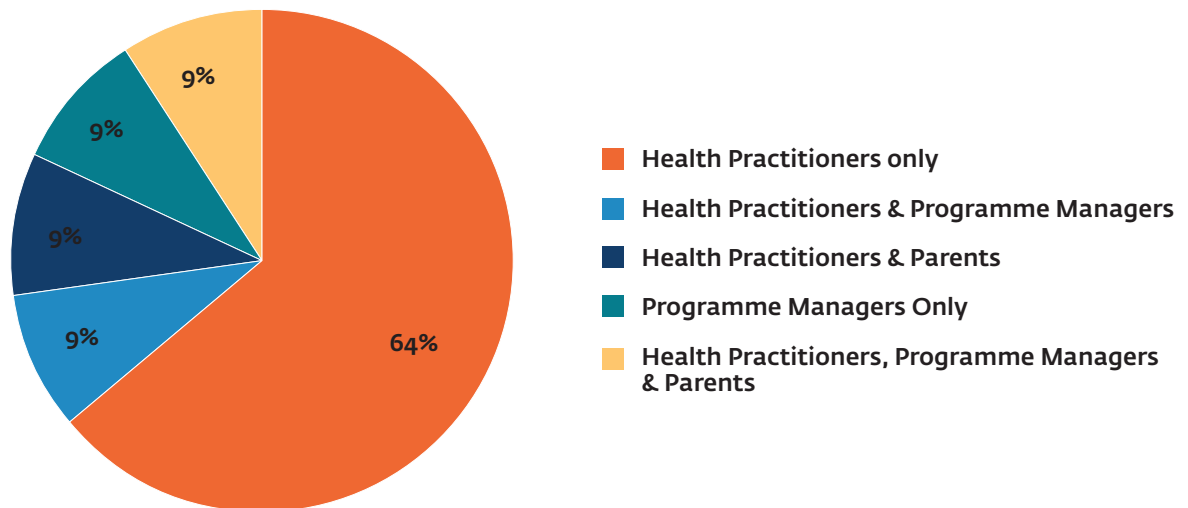


Figure 6: Target audience of guidelines

In all the included guidelines except one, either the patients, caregivers or healthcare providers were consulted as part of the expert panel during guideline development. Four guidelines invited only health providers while six involved patients/patient advocacy groups in addition to health providers. One guideline did not state whether health providers or patients were consulted during the guideline development. For 82% (9/11) of the guidelines included in this baseline assessment, the Federal Ministry of Health (FMOH) alone initiated their development. In two other guidelines, the FMOH along with professional associations and other stakeholders initiated their development (Figure 7). The most common diseases and child-health areas covered in the included guidelines were newborn care and HIV (Figure 8).

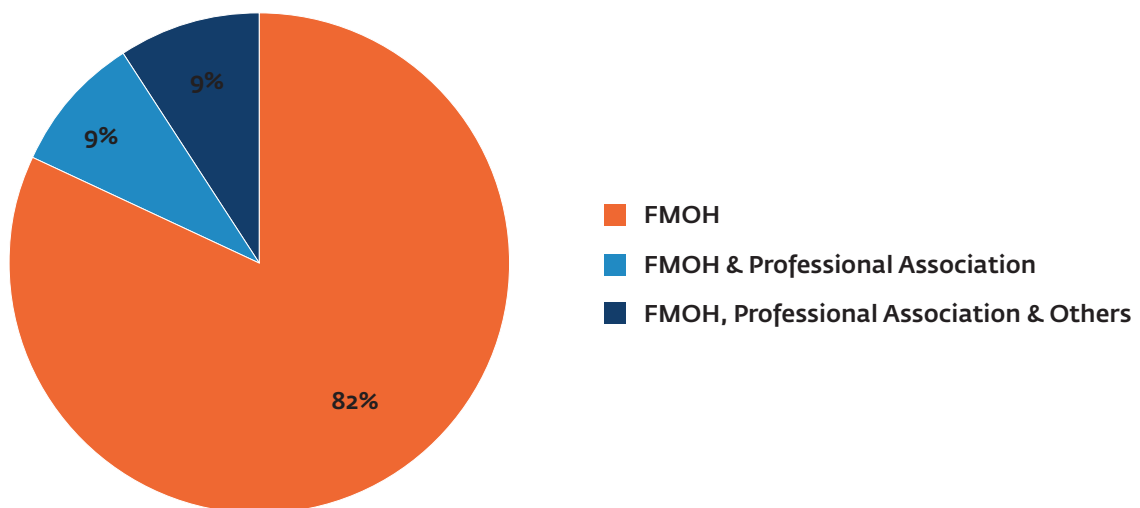


Figure 7: Developer of guidelines

Disease and child-health areas

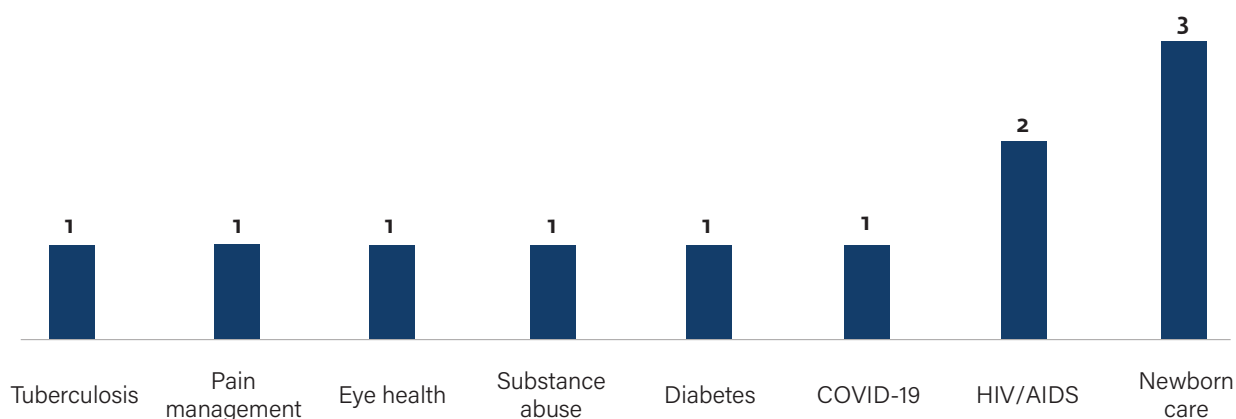


Figure 8: Disease and child-health areas covered in the included guidelines

Nine guidelines described the group that developed the guidelines as contributors. One guideline described the group that developed the guidelines as the editorial team, and in one there was no description of the group responsible for developing the guideline. Ten of the 11 guidelines listed the names of the guideline panel members. One of the 11 guidelines had an external review team whose names were listed. There was no categorisation of guideline panel members.

Three of the 11 guidelines used GRADE or other systems to assess the overall certainty of evidence.

Seven of the 11 guidelines were adapted from WHO guidelines or those of other external organisations. However, only two of these explicitly described the adoption or adaptation process. All seven adapted guidelines provided links to the parent guidelines from which they were adapted or adopted.

Quality of included Guidelines using AGREE II

Table 2 provides the individual domain scores as well as the overall scores for guidelines assessed using the AGREE II tool. The scores for each domain varied. Overall, the scope and purpose and clarity of presentation domains had the highest median scores (83%; Q1 – Q3: 64 - 94% and 81%; Q1 -Q3: 72 -92% respectively). The domain with the lowest median score was editorial independence (8%; 8–8%). Figures 9 and 10 compare the distribution of scores for all the AGREE II tool domains between adapted and *de novo* guidelines. From both figures, it is apparent that adapted guidelines were associated with higher-quality scores from the AGREE II appraisal.

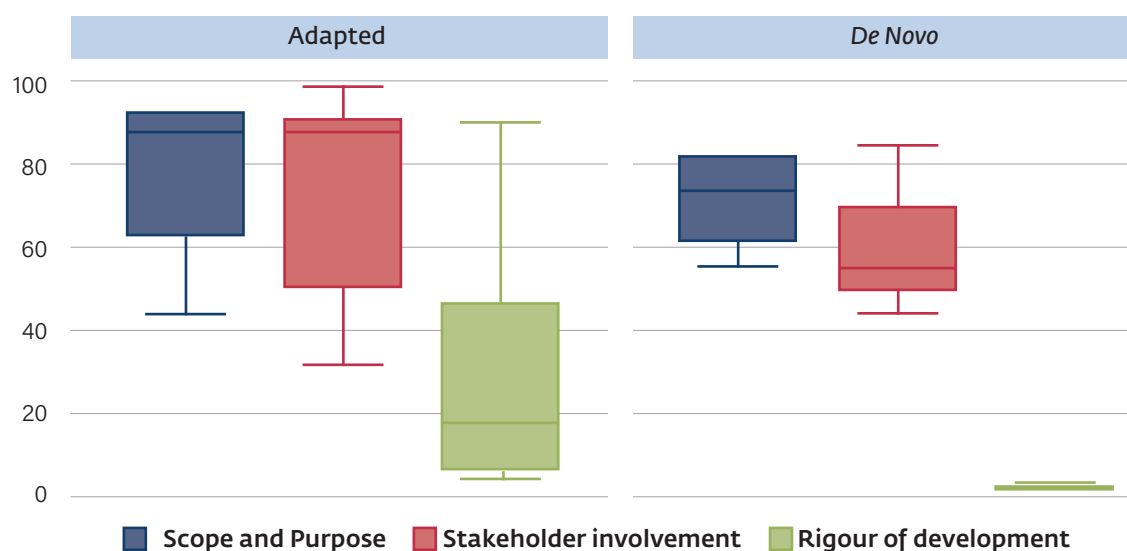


Figure 9: Distribution of scores for the first three AGREE II domains, comparing adapted and de novo guidelines

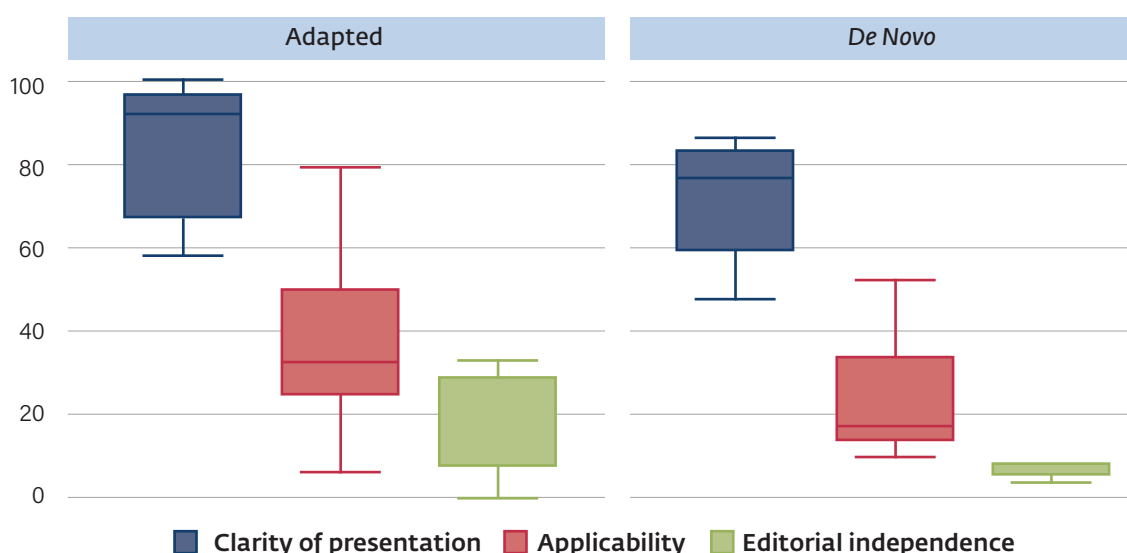


Figure 10: Distribution of scores for the last three AGREE II domains, comparing adapted and *de novo* guidelines

Scope and purpose (domain 1)

The median score for the scope and purpose domain was 83%; 64 – 94%. Seven guidelines achieved scores higher than 80%. These guidelines clearly described the overall objectives and the health questions covered by the guideline. In addition, the population to whom the guidelines were meant to apply were in most cases specifically described.

Stakeholder involvement (domain 2)

For this domain, the median score was 56%; 50 – 89%. Five guidelines achieved a score of more than 75% for the stakeholder-involvement domain. One guideline (National guideline for the prevention, control, and management of diabetes mellitus in Nigeria) achieved the maximum score of 100%. One guideline (Guidelines on the use of the shorter regimen and new drugs in the clinical and programmatic

management of drug resistant tuberculosis and co-infections of Nigeria) scored 6% for this domain. The reasons for this low score were the lack of assessment of the views and preferences of the target population and a lack of clarity on the target users.

To make the results clearer, domain and overall scores are colour coded in Table 2.

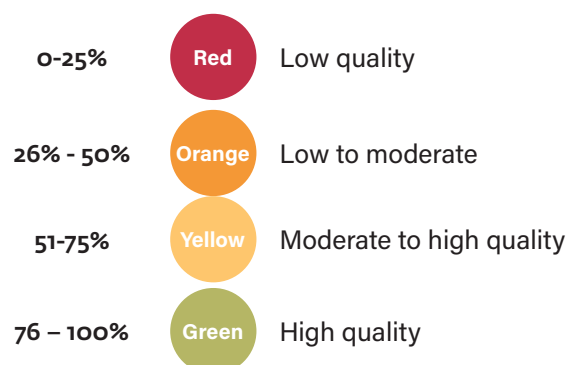


Table 2: Domain scores and overall assessment of guidelines using the AGREE II tool

GUIDELINE	AGREE II domain scores (%)						Overall score
	1 Scope and purpose	2 Stakeholder involvement	3 Rigour of development	4 Clarity of presentation	5 Applicability	6 Editorial independence	
Adapted guidelines							
1 Guidelines on the use of the shorter regimen and new drugs in the clinical and programmatic management of drug resistant tuberculosis and co-infections of Nigeria	44	6	10	72	38	8	42
2 Guidelines for management of pain in Nigeria	94	89	48	97	29	33	67
3 National guideline for the prevention, control and management of diabetes mellitus in Nigeria	94	100	91	100	79	29	83
4 National guidelines for HIV prevention, treatment and care 2020	94	89	18	92	33	8	50
5 National guidelines for the treatment of substance use disorders for Nigeria	89	92	6	92	50	0	33
6 National interim guidelines for clinical management of COVID-19	86	50	26	75	25	8	50
7 National guidelines for comprehensive newborn care	63	50	4	58	6	8	33
Median	89 (64 - 94)	89 (50 - 92)	18 (6 - 48)	92 (72 - 97)	33 (25 - 50)	8 (8 - 29)	50 (33 - 67)

GUIDELINE	AGREE II domain scores (%)						
	1 Scope and purpose	2 Stakeholder involvement	3 Rigour of development	4 Clarity of presentation	5 Applicability	6 Editorial independence	Overall score
De novo guidelines							
8 Treatment guidelines for delivery of child eye health services in Nigeria	83	86	1	47	17	8	33
9 Kangaroo mother care (KMC) operational guidelines	56	56	1	86	52	8	25
10 National guidelines for basic newborn care	67	44	2	72	10	4	25
11 National guidelines for HIV testing services	83	56	3	81	17	8	33
Median (Q1 - Q3)	75 (59 - 83)	56 (47 - 79)	2 (1 - 3)	77 (53 - 85)	17 (12 - 43)	8 (5 - 8)	29(25-33)
All guidelines							
Median (Q1 - Q3)	83 (64 - 94)	56 (50 - 89)	6 (2- 26)	81 (72 - 92)	29 (17 -50)	8 (8-8)	33(33-50)

Rigour of development (domain 3)

The median score for this domain was the lowest at 6%; 2 – 26%. The highest score (91%) was achieved by one set of guidelines (National guideline for the prevention, control, and management of diabetes mellitus in Nigeria). Six of the eleven guidelines made some attempt to report how the health benefits, side effects, and risks had been considered in formulating the recommendations and provided links between the recommendations and the supporting evidence.

The domain score for rigour of development was below 50% for ten guidelines. The main reasons for low scores in this domain were unclear descriptions of the strengths and limitations of the body of evidence and lack of clarity of the methods taken to undertake the external review of the guidelines and how the information gathered was used to inform the guideline-development process and/or the formulation of recommendations.

Clarity of presentation (domain 4)

The median score for this domain was 81% (Q1 – Q3: 72 - 92%). Most of the CPGs had easily identifiable key recommendations contained in tables or specially formatted text. The guidelines also clearly described the different options for management of the conditions or health issues.

Applicability (domain 5)

For this domain, the median score was 29% (Q1-Q3: 17 – 50%). The main limitations were a lack of or not clearly described facilitators and barriers for application of these guidelines, lack of information on any

potential resource implications of applying the recommendations and a general lack of monitoring and audit criteria to measure the application of guideline recommendations.

Editorial independence (domain 6)

For this domain, the median score was 8% (Q1-Q3: 8 -8%). One guideline achieved a score of 71%. Ten CPGs had a score below 20% mainly because they did not provide an explicit statement about declaration of competing interests by guideline-development group members.

Overall quality score

The median overall score was 33% (Q1-Q3: 33 – 50%). The lowest and highest overall score achieved by the appraised guidelines were 25% and 83% respectively. The generally low overall scores were due to the many limitations in the rigour of development, applicability, and editorial independence domains of AGREE II.

Table 3: Comparison of national adapted CPGs to ‘parent’ guidelines

Citation of national guideline	Scoring: domains for national guideline	Scoring: domains for parent guideline
National interim guidelines for clinical management of COVID-19	<ul style="list-style-type: none"> ▪ Domain 1: 86% ▪ Domain 2: 50% ▪ Domain 3: 26% ▪ Domain 4: 75% ▪ Domain 5: 25% ▪ Domain 6: 8% 	<ul style="list-style-type: none"> ▪ Domain 1: 81% ▪ Domain 2: 78% ▪ Domain 3: 50% ▪ Domain 4: 94% ▪ Domain 5: 33% ▪ Domain 6: 71%
National guidelines for the treatment of substance use disorders for Nigeria	<ul style="list-style-type: none"> ▪ Domain 1: 89% ▪ Domain 2: 92% ▪ Domain 3: 6% ▪ Domain 4: 92% ▪ Domain 5: 50% ▪ Domain 6: 0% 	<ul style="list-style-type: none"> ▪ Domain 1: 100% ▪ Domain 2: 69% ▪ Domain 3: 30% ▪ Domain 4: 89% ▪ Domain 5: 73% ▪ Domain 6: 8%
Guidelines on the use of the shorter regimen and new drugs in the clinical and programmatic management of drug resistant tuberculosis and co-infections of Nigeria	A comparison of the national and parent guideline was not possible as the national guidelines did not specifically adapt or adopt a specific guideline	
Guidelines for management of pain in Nigeria		
National guideline for the prevention, control and management of diabetes mellitus in Nigeria		
National guidelines for HIV prevention treatment and care 2020		

04 DISCUSSION

This landscape analysis of newborn and child-health related CPGs over the last five years in Nigeria shows that the CPG development process is predominantly driven by the country's Federal Ministry of Health with most directed at all levels of care. The majority of CPGs focused on infants and young children and targeted health practitioners for their implementation. Newborn care and HIV prevention and treatment were the top conditions addressed and the quality of the CPGs was generally limited by poor rigour of development, applicability and editorial independence. Adapted guidelines were associated with higher-quality scores from the AGREE II appraisal compared to *de novo* guidelines.

That the FMOH was the main driver of CPG development in Nigeria underscores the influence the government and its agencies have in the process and the likelihood that they leverage methods and logistic resources to support CPG activities. On the other hand, the poor rigour of development for most CPGs may suggest a limited capacity to adopt evidence-based methods in the development and adaptation of CPGs to inform practice. Trustworthy CPGs with good methodological rigour are costly to develop and produce necessitating trade-offs between pragmatism and efficiency in the process.^{23,24}

The complexity and resource-intensive nature of CPG development suggests the need to keep it simple and focused. Our findings of CPGs targeted at all levels of care and having recommendations for both children and adults in the same document presents implementation challenges. The feasibility of application of the recommendations across such a wide spectrum of care may lead to poor adherence.²⁵

Of all the CPGs included, only three focused on poverty-related diseases (PRDs) (TB and HIV) an indication that their development may not be underpinned by prioritisation activities that recognise the impact of PRDs on burden and health outcomes for newborn and child health in Nigeria. In addition, the FMOH may not have the resources to expand their scope leaving room for specialty associations and other groups to also contribute to the process. The time limitation of five years included in our eligibility criteria may have limited both the number of CPGs identified and the scope. Nonetheless, to address more priority areas, more stakeholder groups may need to be involved in CPG development freeing government resources for signposting quality processes.

Strengths and limitations of the study

This landscape analysis followed pre-defined systematic methods that were well documented in a protocol. The search for CPGs included international databases, national and sub-national ministries of health websites, professional association websites and personal contacts. The methods also included measures to limit selection bias such as independent screening for eligibility, cross-checked data extraction and appraisal using the AGREE II tool by two people independently.

Nonetheless, it is possible that some guidelines may have been missed despite the wide search and attempts to contact individuals in the field. Some professional bodies with published CPGs may not put them online. Given the study date limitations of five years, the data may not be a full reflection of the extent of the landscape of CPGs in the area of newborn and child health in Nigeria.

Implications for practice and policy

Current efforts and interest in CPG development in the context of achievement of SDG 3.2 need to be expanded to include relevant PRDs that drive morbidity and mortality in newborn and child health in Nigeria. This may be achieved through stakeholder-driven priority setting and careful study of the research agenda focus of the country. Prioritisation of newborn and young child-health conditions using evidence-based methods that feed into the CPG process will need to be more rigorous. Other key stakeholders will need to be involved in the process, and guideline-development methodology improved upon with the FMOH acting as a clearinghouse.



06 CONCLUSION

The CPG landscape in newborn and child health is predominantly driven by the Federal Ministry of Health, focuses less on PRDs and often simultaneously targets the different levels of care. The methods for CPG development and adaptation will need to be improved on for effective and sustainable implementation.



07

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08 ETHICS

As the research project was based on publicly available documents, we did not seek ethics approval to conduct the study.

09 FUNDING

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Appendix A: Search Strategy/Details

Google (Search strings)

Date of Search 20 June 2022

Nigeria AND Guideline* AND (Newborn OR Infant* OR baby OR babies OR Perinatal OR Child* OR toddler* OR preadolescent* OR "Maternal and child health" OR Neonat* OR Underfive* OR "under-five" OR "under-fives") 149 records

Date of Search 22 June 2022

Nigeria AND Protocol* AND (Newborn OR Infant* OR baby OR babies OR Perinatal OR Child* OR toddler* OR preadolescent* OR "Maternal and child health" OR Neonat* OR Underfive* OR "under-five" OR "under-fives") 146 records

Nigeria AND Standard* AND (Newborn OR Infant* OR baby OR babies OR Perinatal OR Child* OR toddler* OR preadolescent* OR "Maternal and child health" OR Neonat* OR Underfive* OR "under-five" OR "under-fives") 171 records

Nigeria AND Guidance AND (Newborn OR Infant* OR baby OR babies OR Perinatal OR Child* OR toddler* OR preadolescent* OR "Maternal and child health" OR Neonat* OR Underfive* OR "under-five" OR "under-fives") 154 records

Website Searches

Organisation	URL	Date of Search	Guidelines Identified
1 Federal Ministry of Health	https://www.health.gov.ng/index.php?option=com_content&view=article&id=158:family-health&catid=55&Itemid=529	19 June 2022	33 guidelines identified
2 SMOH websites (websites available for 31 States)	Various	20-22 June 2022	No guidelines retrieved
3 Paediatric Association of Nigeria	https://pan-ng.org/	21 June 2022	Management of community acquired pneumonia (CAP) in children: Clinical practice guidelines by the Paediatrics Association of Nigeria (PAN)
4 Nigerian Society of Neonatal Medicine	https://www.nisonm.org/	21 June 2022	No guidelines retrieved
5 Society of Gynaecology and Obstetrics of Nigeria	https://sogon.org/	21 June 2022	SOGON advice on SARS-COV-19 (COVID-19) – Practice Guidance for Members (file not downloadable)
6 National Association of Nigeria Nurses and Midwives (NANNM)	https://nannm.com.ng/	21 June 2022	No guidelines retrieved
7 Save the Children	https://nigeria.savethechildren.net/	22 June 2022	No guidelines retrieved

8	International Guidelines clearinghouses:	GIN Library (https://g-i-n.net/international-guidelines-library/); ECRI (https://www.ecri.org/); and BIGG (https://sites.bvsalud.org/bigge/en/biblio/)	22 June 2022	No Nigerian guidelines retrieved
9	Association of Public Health Physicians of Nigeria (APHPN)	https://aphpn-ng.org/	27 June 2022	No guidelines retrieved
10	Nigerian Journal of Paediatrics	https://www.njpaediatrics.com/	27 June 2022	Management of community acquired pneumonia in children: Clinical practice guidelines by PAN:2015
11	Tropical Journal of Obstetrics and Gynaecology (TJOG)	https://tjog.org/index.php/tjog/search/search	27 June 2022	No guidelines retrieved

Appendix B: Eligibility Screening form/criteria

Eligibility criteria

Documents	<p>CPGs are defined by WHO as “systematically developed evidence-based statements which assist providers, recipients, and other stakeholders to make informed decisions about appropriate health interventions”.</p> <p>We will include any documents that put forward actionable recommendations for individual care. (Including <i>Guidelines, clinical practice guidelines, guides, norms, protocol, standards, consensus statements, recommendations</i>)</p> <p>We will include draft versions of documents within the publication date range, should no final version be identified.</p> <p>The CPGs may be developed <i>de novo</i> (from scratch); or adapted or adopted and refer to a primary CPG or more than one primary CPG.</p> <p><u>Exclude:</u></p> <p>Where we find related documents (e.g. summaries, or decision aids) the primary CPG needs to be identified to be included in the review. We will exclude guidelines that put forward actions/ recommendations not aimed at individual patients (newborns and children), such as systems, population, school-based, community-based or policy-level interventions/strategies.</p> <p>Where multiple versions or updates of the same CPG exists, we will use the most current (recently produced/ published) version for inclusion, noting the older versions that were found.</p>
Focus area	<p>Newborn and child health from birth up to less than 12 years (<12 years). We will consider any documents that recommend options for health promotion, diagnosis of health conditions or interventions for prevention, management, or rehabilitation.</p> <p>Where documents also make recommendations for care of other age groups, e.g. adolescents or mothers/caregivers, we will include the document if a section is dedicated to healthcare recommendations for newborn and child health.</p>
Settings	<p>National or regional CPGs for Nigeria will be sought.</p> <p>CPGs relevant for districts and/or hospital CPGs will not be included.</p> <p>CPGs developed for the African region that include Nigeria will not be included.</p>
Publication year	<p>From 1 January 2017 – 2022</p>
Language	<p>CPGs in English will be included, and where other language documents (e.g. local national languages) are found, if any member of the research team can translate and appraise, they may be included.</p>

Appendix C: Table of CPGs

	GUIDELINE	YEAR OF PUBLICATION
1	The Red Book Medical and Dental Council of Nigeria Guidelines on Minimum standards of Medical and Dental Education in Nigeria	2006
2	Guidelines for Donation of Medicines and Health Care Equipment in Nigeria	2007
3	Standard Treatment Guidelines, Nigeria	2008
4	National Guidelines for HIV and AIDS Treatment and Care in Adolescents and Adults	2010
5	National Guidelines for Prevention of Mother to Child Transmission of HIV (PMTCT)	2010
6	National Operational Guidelines for Community Management of Acute Malnutrition	2010
7	Nigeria: National Guidelines for Paediatric HIV and AIDS Treatment and Care	2010
8	Guidelines on Infant and Young Child Feeding in Nigeria	2011
9	Nigeria: National Guidelines for HIV Counselling and Testing	2011
10	National Drug Distribution Guidelines	2012
11	National Guidelines for the Integration of Adolescent and Youth Friendly Services into Primary Health Care Facilities in Nigeria	2013
12	Clinical Practice Guideline for Diabetes Management in Nigeria 2nd Edition	2013
13	Guidelines for Malaria Lymphatic Filariasis Co-Implementation in Nigeria	2013
14	National Guidelines for Promoting Access of Young People to Adolescent and Youth Friendly Services in Primary Health Care Facilities in Nigeria	2014
15	Integrated National Guidelines for HIV Prevention treatment and care	2014
16	National Framework and Guidelines for the National Quality Improvement Programme on HIV/AIDS Services and Care (NIGERIAQUAL)	2014
17	National Guideline for the control and management of sickle cell disease	2014
18	National Nutritional Guideline on NCD prevention, control, and management	2014
19	National Guidelines for Maternal and perinatal deaths surveillance and response in Nigeria	2015
20	Integrated National Guidelines for HIV Prevention Treatment and care	2015
21	National Tuberculosis, Leprosy & Buruli ulcer Management and Control Guidelines	2015
22	Management of community acquired pneumonia (CAP) in children: Clinical practice guidelines by the Paediatrics Association of Nigeria (PAN)	2015
23	National Guidelines for Inpatient Management of Severe Acute Malnutrition in Infants and Young Children in Nigeria	2016
24	National Guidelines for HIV Prevention, Treatment and Care	2016
25	National Guidelines for the Prevention, Care and Treatment of Viral Hepatitis B & C In Nigeria	2016
26	Nigeria Standard Treatment Guidelines 2nd Edition (2016)	2016

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